

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



2822 \$  
Atty. Dkt. No. 039153-0472 (G1477)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Besser et al.  
Title: METHOD OF IMPLANTING  
COPPER BARRIER MATERIAL  
TO IMPROVE ELECTRICAL  
PERFORMANCE  
Appl. No.: 09/994,397  
Filing Date: 11/26/2001  
Examiner: Guerrero, Maria F  
Art Unit: 2822

<b>CERTIFICATE OF MAILING</b> I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: <b>Commissioner for Patents</b> , PO Box 1450, Alexandria, Virginia 22313-1450, on the date below.  Sandra Murphy (Printed Name)  <i>Sandra Murphy</i> (Signature)  October 30, 2003 (Date of Deposit)
--

8/INS  
1-6-04  
A. Waller

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 CFR §1.56**

Mail Stop AF  
Commissioner for Patents  
PO Box 1450  
Alexandria, Virginia 22313-1450

Sir:

Submitted herewith on Form PTO-1449 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56. A copy of each listed document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

11/05/2003 AADDFO1 00000098 09994397

01 FC:1806

180.00 OP

RECEIVED  
NOV - 6 2003  
TECHNOLOGY CENTER 2800

**TIMING OF THE DISCLOSURE**

The listed documents are being submitted in compliance with 37 CFR §1.97(d), before payment of the issue fee.

**RELEVANCE OF EACH DOCUMENT**

All of the documents are in English.

Applicants respectfully request that any listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO-1449 be returned in accordance with MPEP §609.

**STATEMENT**

The undersigned hereby states in accordance with 37 CFR §1.97(e)(2) that no item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of the information disclosure statement.

**FEE**

A fee in connection with submission of an information disclosure statement under 37 CFR §1.97(d) in the amount of \$180.00 in accordance with 37 CFR §1.17(p) is attached.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 CFR §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 06-1447. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or

even entirely missing, the Commissioner is authorized to charge the unpaid amount to  
Deposit Account No. 06-1447.

Respectfully submitted,

Date 10-29-03

FOLEY & LARDNER  
777 East Wisconsin Avenue, Suite 3800  
Milwaukee, Wisconsin 53202-5306  
Telephone: (414) 297-5768  
Facsimile: (414) 297-4900

By Joseph N. Ziebert

Joseph N. Ziebert  
Attorney for Applicant  
Registration No. 35,421

Form PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

039153-0472 (G1177)

SERIAL NO.

09/994,397

APPLICANT

Besser et al.

FILING DATE

11/26/2001

GROUP ART UNIT

2822

## O I INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

## U.S. PATENT DOCUMENTS

INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
	A1	6,521,532	02/18/2003	Cunningham			
	A2	6,500,749	12/31/2002	Liu et al.			
	A3	6,482,740	11/19/2002	Soininen et al.			
	A4	6,482,734	11/19/2002	Ha et al.			
	A5	6,465,867	10/15/2002	Bernard et al.			
	A6	6,461,675	10/08/2002	Paranjpe et al.			
	A7	6,423,633	07/23/2002	Tseng			

## FOREIGN PATENT DOCUMENTS

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION	
							YES	NO

## OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

	A32	James A. Cunningham, "Improving Copper Interconnects: A Search for Useful Dopants," Semiconductor International, (April, 2000), pp. 1-8.

EXAMINER

DATE CONSIDERED

\* EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include any copy of this form with next communication to applicant.

Form PTO-1449  
(MODIFIED)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

039153-0472 (G1177)

SERIAL NO.

09/994,397

APPLICANT

Besser et al.

FILING DATE

11/26/2001

GROUP ART UNIT

2822

## INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

## U.S. PATENT DOCUMENTS

EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
	A8	6,420,262	07/16/2002	Farrar			
	A9	6,399,496	06/04/2002	Edelstein et al.			
	A10	6,344,413	02/05/2002	Zurcher et al.			
	A11	6,297,146	10/02/2001	Lopatin			
	A12	6,294,463	09/25/2001	Tseng			
	A13	6,180,522	01/30/2001	Hong			
	A14	6,156,638	12/05/2000	Agarwal et al.			
	A15	6,096,648	08/01/2000	Lopatin et al.			
	A16	6,030,895	02/29/2000	Joshi et al.			
	A17	5,969,422	10/19/1999	Ting et al.			
	A18	5,770,517	06/23/1998	Gardner et al.			
	A19	5,654,245	08/05/1997	Allen			
	A20	5,552,341	09/03/1996	Lee			
	A21	5,300,462	04/05/1994	Kakumu			
	A22	5,243,222	09/07/1993	Harper et al.			
	A23	5,224,520	07/06/1993	Shinbara et al.			
	A24	5,004,520	04/02/1991	Tsuji et al.			
	A25	US2002/0137332	09/26/2002	Paranjpe et al.			
	A26	US2002/0115292	08/22/2002	Andricacos et al.			
	A27	US2002/0102838	08/01/2002	Paranjpe et al.			
	A28	US2002/0084529	07/04/2002	Dubin et al.			
	A29	US2002/0053741	05/9/2002	Iwasaki et al.			
	A30	US2002/0039542	04/04/2002	Bogel et al.			
	A31	US2002/0036309	03/28/2002	Sekiguchi et al.			